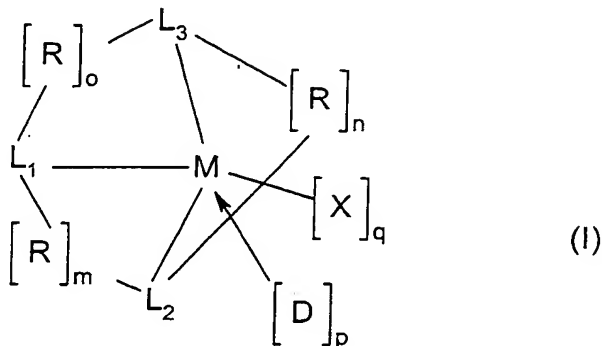


Claims

1. Olefin polymerization catalyst component comprising an organometallic compound of general formula I



wherein:

M is a transition metal of groups 3, 4-10, lanthanide or actinide of the periodic table of the elements, preferably titanium, zirconium or hafnium;

each **R** is independently a structural bridge rigidly connecting two ligands **L**₁, **L**₂ and **L**₃ and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron;

m, **n** and **o** are 0 or 1, with the proviso that **m+n+o** is 2 or 3; ??

L₁ is a ligand of the cyclopentadienyl type or is isolobal to cyclopentadienyl, preferably a cyclopentadienyl, indenyl or fluorenyl ring, cyclopenteno[b]tiophenyl, cyclopenteno[b:b']-dithiophenyl, cyclopenteno[b]pyrrolyl, boratabenzene, phospholyl, dihydroindeno[b]indolyl, optionally substituted by one or more **R**¹ groups; most preferably a cyclopentadienyl, indenyl or fluorenyl ring, optionally substituted by one or more **R**¹ groups;

L₂ is a ligand of the cyclopentadienyl type or is isolobal to cyclopentadienyl, or a monovalent anionic ligand selected from the group consisting of N, P, B when **m+n** = 2, it is selected from the group consisting of **NR**¹, **PR**¹, **BR**¹, O and S when **m+n** = 1;

L₃ is a monovalent anionic ligand selected from the group consisting of N, P, B when **n+o** = 2, it is selected from the group consisting of **NR**¹, **PR**¹, **BR**¹, O and S when **n+o** = 1;

R¹ is hydrogen, C₁-C₂₀ alkyl, C₃-C₂₀ cycloalkyl, C₆-C₂₀ aryl, C₃-C₂₀ alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br;

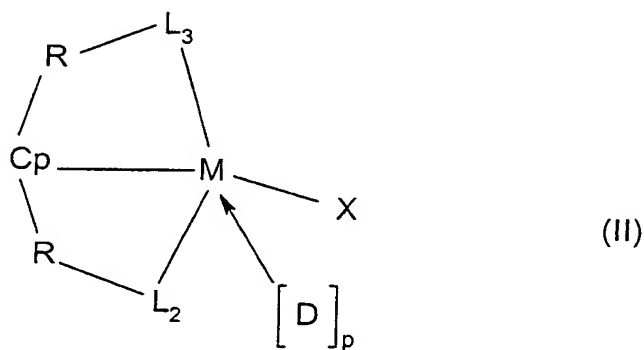
each X is independently selected from the group consisting of hydrogen, halogen, NR^2_2 , R^2 with R^2 equal to $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br;

q is a number whose value is: 0, 1, 2 or 3, depending on the valency of the metal M;

D is a neutral Lewis base,

p is a number whose value is: 0, 1, 2 or 3.

2. Catalyst component according to claim 1 wherein n is 0 and each R is independently selected from CR^1_2 , SiR^1_2 , $\text{CR}^1_2\text{-CR}^1_2$, $\text{CR}^1_2\text{-SiR}^1_2$, $\text{SiR}^1_2\text{-SiR}^1_2$; wherein R^1 is independently selected from hydrogen, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.
3. Catalyst component according to claim 1 wherein D is selected from the group consisting of linear or cyclic ethers, amines and phosphines.
4. Catalyst component according to claim 1 wherein the organometallic compound has formula (II)



wherein Cp is a cyclopentadienyl or indenyl ring, optionally substituted by one or more R^1 groups, M is selected from Ti, Zr and Hf

each R is independently selected from CR^1_2 , SiR^1_2 , $\text{CR}^1_2\text{-CR}^1_2$, $\text{CR}^1_2\text{-SiR}^1_2$, $\text{SiR}^1_2\text{-SiR}^1_2$, wherein R^1 is hydrogen, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

L_2 and L_3 are independently selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S;

112 ²⁰⁰⁴ X is independently selected from the group consisting of hydrogen, halogen, NR_2 , R^2 with R^2 equal to $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_3\text{-C}_{20}$ alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

D is a neutral Lewis base;

5 p is a number whose value is: 0, 1, 2 or 3.

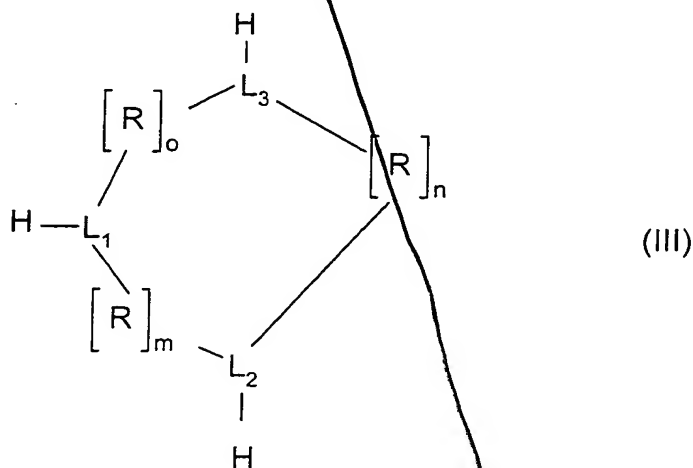
5. Catalyst component according to claim 1 wherein o is equal to 0.

6. Catalyst component according to claim 1 wherein at least one L group selected from L_1 , L_2 and L_3 and/or one R group contains a $-\text{O-SiR}_3$ group.

10 ¹⁰⁰ ^{AI} 7. Catalyst component comprising a compound according to claims 1-6 and a porous support.

8. Olefin polymerization catalyst comprising a catalyst component according to claims 1-7 and a cocatalyst selected from aluminoxanes and boron Lewis acids.

15 9. Process for the preparation of catalyst components according to claims 1-6 including reacting a compound of formula MX_{q+3} wherein M is a transition metal of groups 3, 4-10, lanthanide or actinide of the periodic table of the elements, X is a monovalent anionic ligand and q is 0, 1, 2, or 3 depending on the valence of the metal M, with a compound of formula III



Alcont.

each **R** is independently a structural bridge rigidly connecting L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron; these atoms can be part of fused rings, aromatics rings or spiro rings;

m, **n** and **o** are 0 or 1, with the proviso that $m+n+o$ is 2 or 3.

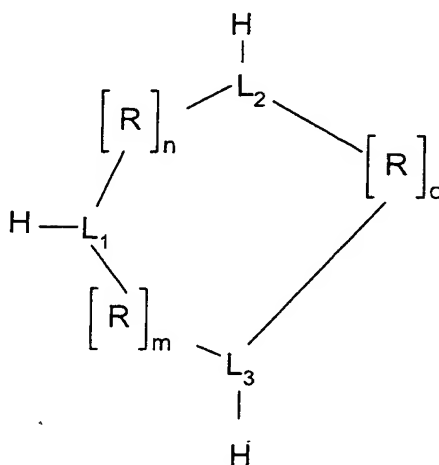
5 L_1 is a group of the cyclopentadienyl type or is isolobal to cyclopentadienyl, optionally substituted by one or more R^1 groups;

L_2 is a group of the cyclopentadienyl type or is isolobal to cyclopentadienyl, or it is selected from the group consisting of N, P, B when $m+n=2$, it is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $m+n=1$;

10 L_3 is selected from the group consisting of N, P, B when $n+o=2$, it is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $n+o=1$;

R^1 is hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

15 10. Compounds formula III



(III)

wherein

each **R** is independently a structural bridge rigidly connecting L_1 , L_2 and L_3 and is constituted by 1 to 4 chain atoms selected from carbon, silicon, germanium, oxygen, boron; these atoms can be part of fused rings, aromatics rings or spiro rings;

m, **n** and **o** are 0 or 1, with the proviso that $m+n+o$ is 2 or 3.

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L_1 is a group of the cyclopentadienyl type (or is isolobal) to cyclopentadienyl, optionally substituted by one or more R^1 groups;

L_2 is a group of the cyclopentadienyl type (or is isolobal) to cyclopentadienyl, or it is selected from the group consisting of N, P, B when $m+n=2$, it is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $m+n=1$;

L_3 is selected from the group consisting of N, P, B when $n+o=2$, it is selected from the group consisting of NR^1 , PR^1 , BR^1 , O and S when $n+o=1$;

R^1 is hydrogen, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, C_3 - C_{20} alkenyl, optionally comprising 1 to 5 heteroatoms such as Si, N, P, O, F, Cl, Br.

- 10 11. Process for the polymerization of olefins characterized by the use of a catalyst according to claim 8.
12. Polyolefins obtainable by the process of claim 11.

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